Editorial

Genetic Testing: Do Cancer Care Nurses Have a Role?

Violeta Lopez

Alice Lee Centre for Nursing Studies, Yong Loo Lin School of Nursing, National University of Singapore, Singapore

Corresponding author: Violeta Lopez, PhD, RN, FACN

Alice Lee Centre for Nursing Studies, Yong Loo Lin School of Nursing, National University of Singapore, Singapore

Tel: +61 65163116; Fax: +65 67767135

E-mail: nurvl@nus.edu.sg

Received: May 23, 2018, Accepted: June 4, 2018

The field of genetics and genomics and the use of genomic technology in particular are rapidly expanding worldwide in clinical practice and research. Genetic testing is used as a screening and preventive strategy which provides targeted treatments so that patients' lives can be improved.[1,2] There are two types of genetic testing. Both presymptomatic and predictive genetic testing are performed on a person who has a family history of a mutation disorder but has no specific disorders at the time of testing.[3] However, the positive result of presymptomatic testing means that the person has a 100% chance of developing the disorder in the future, while the results of predictive testing mean that the person has an increased risk to develop the disorder in the future.[3] When the clients become aware of the positive results of their genetic test, they have a perception of a life sentence because of the high chance of developing cancer.[4] Thus, health care professional are faced with many challenges to meet clients' understanding, expectations, and facilitating their decisions about future management plans.[5] Hence, the results of either of these two genetic testing require health-care professionals to provide information and foster psychological support to clients in their decision-making for subsequent genetic testing and reassure clients and their families that their results will be kept private and confidential between them and the health-care professional genetic testing team including nurses and counselors.

According to the National Cancer Institute, cancer is a genetic disease caused by certain genetic mutations that occur randomly in one or a few cells of the body. Somatic mutations arise as a natural consequence of aging, while acquired mutations are present in some cells of the body and are not passed on from their parents to their children.[6] Hereditary mutations are usually inherited from one or both parents. A person needs to inherit only one altered copy of the gene to be at risk for cancers and there is a 50% chance of passing the same altered gene on to the child. Hereditary cancer syndromes account for about 10% of all malignancies and scientists have discovered a number of gene mutations contributing to a person's risk of developing cancers such as breast, ovarian, colorectal, and prostate.[7] Genetic testing is now available for some hereditary cancers and is now an integral part of cancer prevention, early detection services, and treatment.[1,8]

Access this article online	
Quick Response Code:	Website: www.apjon.org
	DOI: 10.4103/apjon.apjon_23_18

Cite this article as: Lopez V. Genetic Testing: Do Cancer Care Nurses Have a Role? Asia Pac J Oncol Nurs 2018;5:391-3.

Cancer gene testing presents many challenges that could include access, cost, risks, benefits, privacy, stigmatization, discrimination, ethical issues, and psychosocial implications of the results.[9,10] Peterson *et al*.[8] found that genetic testing resulted in distress and alienation in some male partners of women who underwent genetic testing for breast cancer, but women who found that they have an increased risk for breast cancer became more engaged in risk reduction behaviors such as breast self-examinations, mammograms, and preventative surgeries. In spite of these challenges and issues, a study found that primary care providers expressed skepticism about the clinical value of genetic testing and were concerned about clients' privacy issues and discrimination by insurance companies and employers.[11] On the other hand, nurses can play a role in identifying who may benefit from genetic testing and also help patients understand the complex issues such as emotional distress arising from either positive or negative results of the test.[10]

Genetic counseling to address genetic testing issues has been gaining precedence focusing on information, support, risk assessment, inheritance pattern analysis, and educational resources.[12] Although genetic counselors play an important part in providing information to these patients, nurses who are with the patients 24 h a day have an intimate knowledge of the patients and their families. They are highly capable in comprehensively assessing patients and their family members for increased cancer risk, educating them about the availability of testing, making referrals for cancer genetic counseling and risk assessments, and providing follow-up care.[1] Equiped nurses' current knowledge and skills together with a better understanding of genetics as an integral part of what nurses need to know, having experience with genetic technologies and information, skills in communication, and building collaborations with genetic counselors and other health-care professionals, they will have a pivotal role in optimizing health care for clients and families before and after genetic testing.[10] Guidelines, standards, and scope of practice and position statements for cancer care nurses involved in genetic testing have been developed. The International Council of Nurses as early in 1998 set forth a position statement on human cloning and in collaboration with the World Health Organization, International Confederation of Midwives, and the International Society of Nurses in Genetics (ISONG)[13] created a declaration on nursing, human rights, human genetics, and public policy.[14] The declaration highlighted access to genetic information and services as a priority ethical principle of justice and benefits of the test to the patient and family as beneficence. The ISONG and American Nurses Association[13] developed the scope of practice for nurses involved in genetic testing that could be helpful as follows:

1. Be aware of the clinical and personal utility of genetic testing, such as positive predictive value, penetrance rates, background population and affected percentages, and advising clients of the meaning of the testing and results
2. Advise clients on the difference between research and clinical use of genetic testing, return of results, clinical utility, and defining the status of a specific test for the individual
3. Augment the informed decision-making process by assessing the client in the context of the client's specific circumstances of family, culture, and community life
4. Integrate into their practice the guidelines for practice (e.g., privacy and confidentiality, truth telling and disclosure, and nondiscrimination)
5. Acquire appropriate education in preparation for providing genetic services that include knowledge of the implications and complexities of genetic testing; ability to interpret results; and knowledge of the ethical, legal, social, cultural, and psychological implications of genetic testing; and
6. Be aware of the genetic health professional and services with whom they can collaborate to maximize the ability of the client to make an informed decision.

In conclusion, cancer care nurses are well positioned to provide specific genetic care and counseling. In the past, only a small number of nurses specialized in nursing genetics can provide care to the patient and family. In recent years, all cancer care nurses need to have an understanding of the human genome and be guided by the Human Genome Project conceptual framework with overarching themes including genomes to biology, genomes to health, and genomes to society and should be integrated into all areas of health professionals and nursing education.[15] Knowledge of cancer care nurses in these three themes will enable them to integrate genomics not only into their practice and research but also into policy discussions and debates for the best interest of their patients, families, and the community.

Acknowledgments

This article was written on the basis of a presentation given at the 8th Nursing Symposium on Cancer Care held in Hong Kong by the Nethersole School of Nursing, Faculty of Medicine, The Chinese University of Hong Kong.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Cragun D, Kinney AY, Pal T. Care delivery considerations for widespread and equitable implementation of inherited cancer predisposition testing. Expert Rev Mol Diagn 2017;17:57-70.
2. Harper JC, Aittomäki K, Borry P, Cornel MC, de Wert G, Dondorp W, *et al.* Recent developments in genetics and medically assisted reproduction: From research to clinical applications. Eur J Hum Genet 2018;26:12-33.
3. Human Genetics Society of Australasia. Guideline: Pre-symptomatic and Predictive Testing for Genetic Disorders. 2014GDO2. Sydney, Australia: Human Genetics Society of Australasia; 2014. p. 1-8.
4. Framp A. Working toward an understanding of the impact of hereditary cancers. Gastroenterol Nurs 2010;33:400-5.
5. Tomlinson AN, Skinner D, Perry DL, Scollon SR, Roche MI, Bernhardt BA, *et al.* "Not tied up neatly with a bow": Professionals' challenging cases in informed consent for genomic sequencing. J Genet Couns 2016;25:62-72.
6. Kelly P. Understanding genomics: No longer optional for gastroenterology nurses. Gastroenterol Nurs 2008;31:45-54.
7. King E, Mahon SM. Genetic testing: Challenges and changes in testing for hereditary cancer syndromes . Clin J Oncol Nurs 2017;21:589-98.
8. Peterson EB, Chou WS, Gaysynsky A, Krakow M, Elrick A, Khoury MJ, *et al.* Communication of cancer-related genetic and genomic information: A landscape analysis of reviews. Transl Behav Med 2018;8:59-70.
9. Beamer LC. Ethics and genetics: Examining a crossroads in nursing through a case study. Clin J Oncol Nurs 2017;21:730-7.
10. Calzone KA, Cashion A, Feetham S, Jenkins J, Prows CA, Williams JK, *et al.* Nurses transforming health care using genetics and genomics. Nurs Outlook 2010;58:26-35.
11. Hamilton JG, Abdiwahab E, Edwards HM, Fang ML, Jdayani A, Breslau ES, *et al.* Primary care providers' cancer genetic testing-related knowledge, attitudes, and communication behaviors: A systematic review and research agenda. J Gen Intern Med 2017;32:315-24.
12. Khoury MJ. Genetics and genomics in practice: The continuum from genetic disease to genetic information in health and disease. Genet Med 2003;5:261-8.
13. International Society of Nurses in Genomics/American Nurses Association. Genetics and Genomics Nursing: Scope and Standards of Practice. Washington, DC: American Nurses Association; 2007.
14. Anderson G, Rorty MV. Key points for developing an international declaration on nursing, human rights, human genetics and public health policy. Nurs Ethics 2001;8:259-71.
15. Feetham S, Thomson EJ, Hinshaw AS. Nursing leadership in genomics for health and society. J Nurs Scholarsh 2005;37:102-10.